ALTO SHAAM®

INSTALLATION

and

MAINTENANCE MANUAL

QC-100

quickchiller™

PROCESSING REFRIGERATION SYSTEM

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#8401 - 3/04

quickchiller® Processing Refrigeration System
INSTALLATION & MAINTENANCE MANUAL

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For complete operational instructions see
***Quickchiller™ Operating Procedure Guide* — Publication Number 265**

1.0 — General Information and Installation

1.1 INTRODUCTION

The Alto-Shaam® Quickchiller is a processing refrigeration system designed to rapidly and uniformly cool hot foods through the "chilling danger zone" of 140° to 40°F (60° to 4°C) in two hours or less. Fast cooling minimizes microbial activity, thereby controlling quality and sanitation in prepared foods. As a result, a five-day storage life is achieved.

Chill processing stops all cooking activity. This enables the operator to accelerate additional preparation sequences. Chilling also enhances the freshly prepared characteristics of foods.

Quick chill processing of prepared foods provides a means to build refrigerated inventories of meals in individual portions and bulk quantities. Chilled inventories can be withdrawn and reheated as required. For complete, comprehensive operating instructions, refer to booklet No. 265, *Quickchiller Operating Procedure Guidelines.*

1.2 SCOPE OF THE MANUAL

This technical manual provides sufficient information for installation and general maintenance of this equipment.

1.3 EQUIPMENT DESCRIPTION

The unit consists of the following parts:

a. **Storage Compartment**: The insulated food storage compartment is clear storage area. This area is dedicated to the rapid decrease of recently cooked foods and as a short-term refrigerated storage area.

b. **Door**: Access to the storage compartment is through a hinge-mounted insulated door. The door includes a full gasket to provide a tight seal.

c. **Evaporator Coil**: The evaporator coil is located in the storage compartment and functions as the distribution point for the cold air associated with the refrigeration system.

d. **Cabinet**: The cabinet is the enclosure consisting of the above items.

e. **Condensing Unit Compartment**: This area contains the condensing unit(s). Remote systems utilize a condensing unit located elsewhere within or external to the facility.

f. **Electrical Enclosure**: The electrical enclosure includes the fuses, relays, and relay board.

1.4 EQUIPMENT SUPPLIED

The Quickchiller is shipped from the factory fully assembled. The complete assembly is palletized and crated to minimize the possibility of damage in shipping and storage. The roll-in cart is shipped separately. See Figure 1.1.

Table 1.4.1 - LEADING PARTICULARS

Distributor:	Alto-Shaam, Inc.
Address:	W164 N9221 Water Street P.O. Box 450 Menomonee Falls, WI 53052-0450 U.S.A.
Type:	Quickchiller™ Processing Refrigeration System Model QC-100 (Self-Contained and Remote)
Purpose:	To effectively speed the chilling process of recently prepared, hot foods.
Power Supply:	**QC-100** (Self-Contained and Remote) 208/230 VAC, 60 Hz, 1 ph 208/230 VAC, 60 Hz, 3 ph optional 40 AMP CIRCUIT RECOMMENDED
Refrigeration:	35000 BTU/HR (max.)
Drain Requirements:	The chiller is furnished with two drain tubes (1/2" PVC) which exit the rear of the chiller at each corner. A drain hose and floor drain are required. On water cooled units, an additional drain (1/2" NPT) exits the bottom of the cabinet in the center.
Water Requirements:	None *(unless unit is water-cooled).* Water cooled units have a water-cooled condenser with a 3/8" FPT inlet connection and a 5/8" sweat outlet connection.
Miscellaneous:	**QC-100** (Self-Contained) Net Weight: 2100 lb. (953 kg) Ship Weight: 2300 lb. (1043 kg)

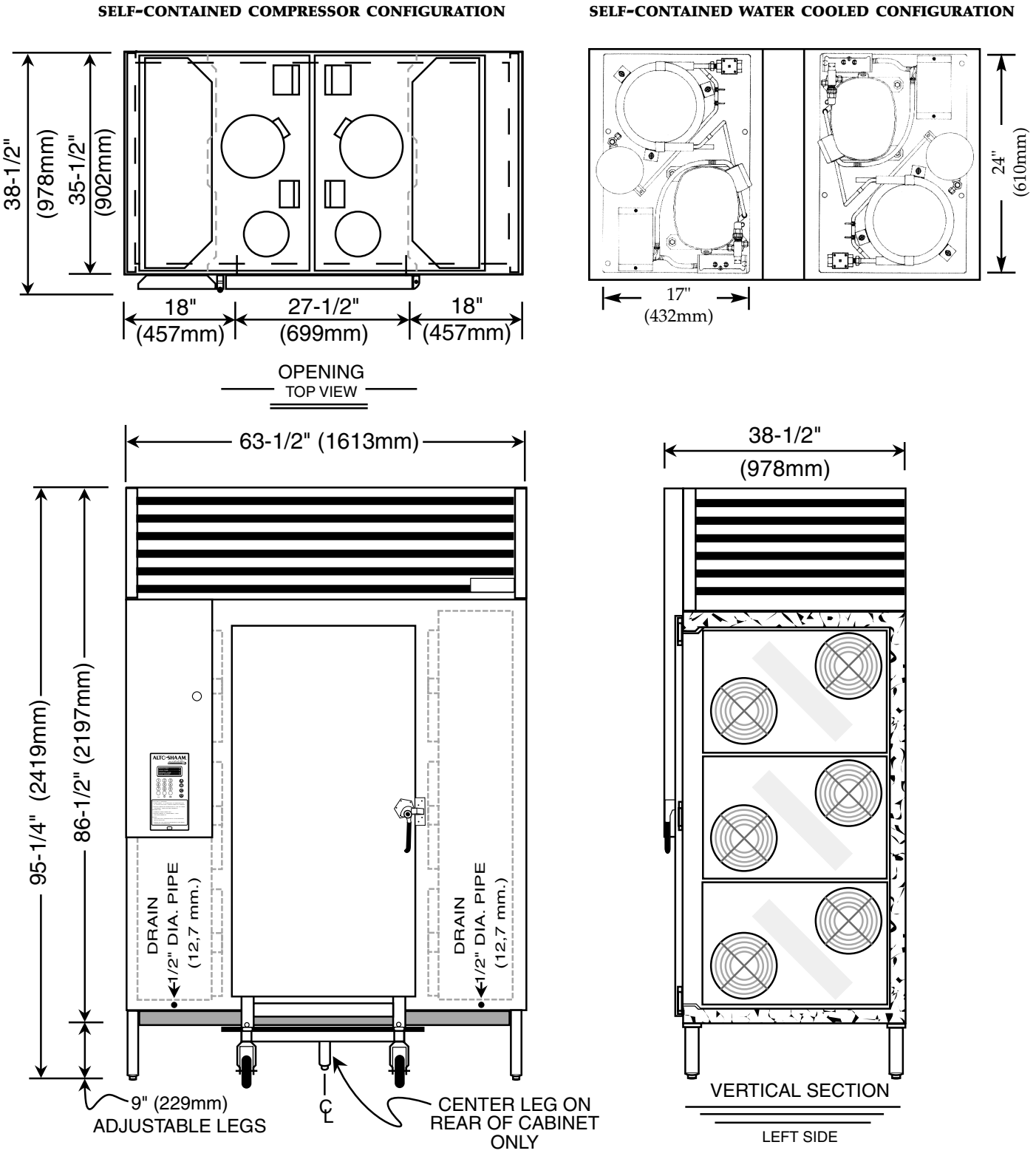


FIG. 1.0

ITEM: Quickchiller Assembly Drawing		
MODEL: QC-100 Quickchiller™ Processing Refrigeration System		
DATE: 02/15/99	**SCALE:** N.T.S.	**DWN BY:** MKK
ALTO-SHAAM. MENOMONEE FALLS, WISCONSIN 53051, U.S.A.		

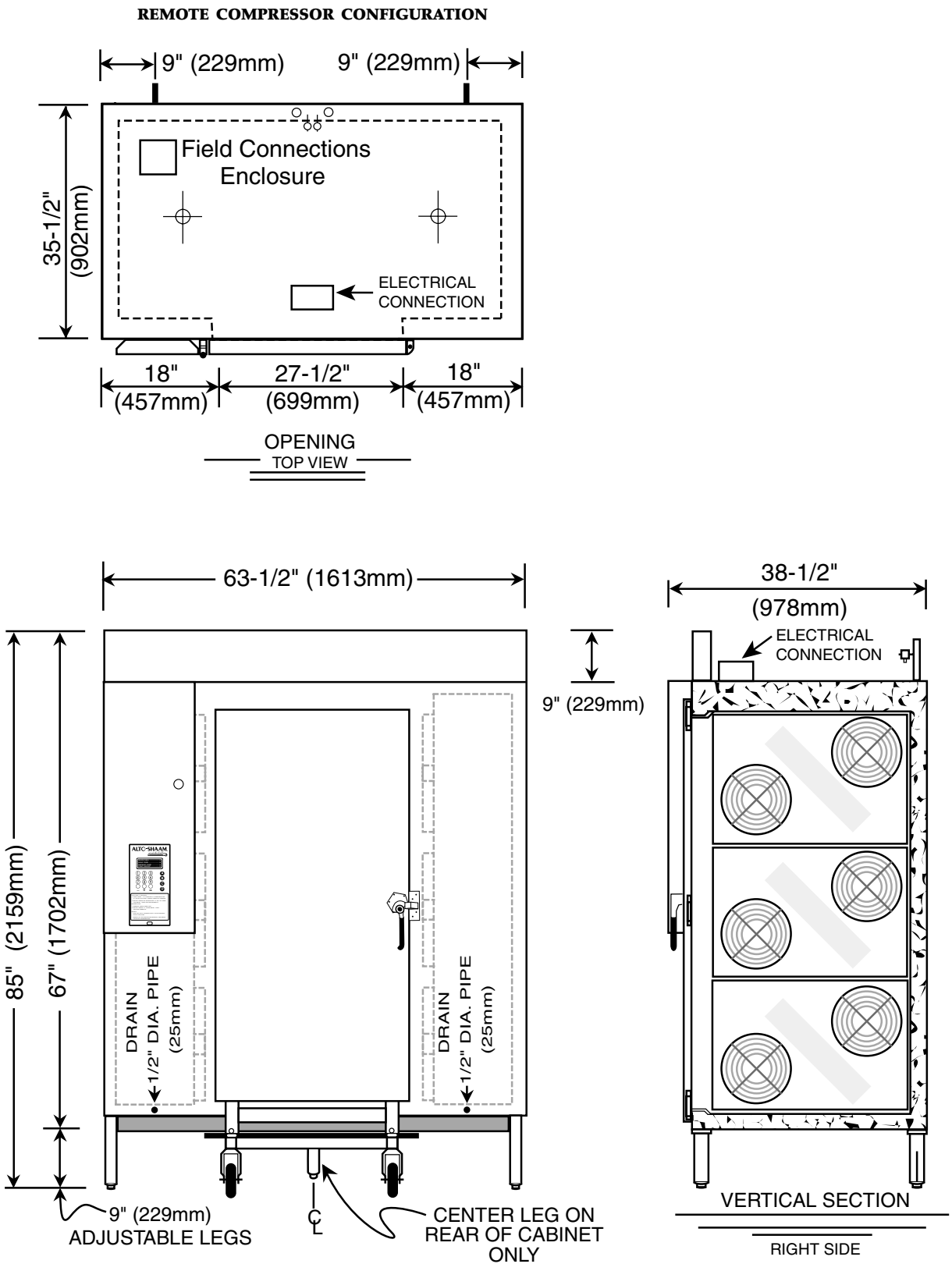


FIG. 1.1

ITEM: Quickchiller Assembly Drawing — Remote	
MODEL: QC-100 Quickchiller™ Processing Refrigeration System	
DATE: 02/15/99 **SCALE:** N.T.S.	**DWN BY:** MKK
ALTO-SHAAM. MENOMONEE FALLS, WISCONSIN 53051, U.S.A.	

1.5 RECEIPT AND UNPACKING

Upon receipt of the Alto-Shaam® Quickchiller, note any crate markings for special instructions and check for crate damage. IMMEDIATELY notify the carrier if there appears to be damage to the equipment. The chiller is shipped from the factory, securely fastened to a single shipping pallet and protected by an external wrapping. Carefully remove all external wrappings and other protective coverings. If all is in order, discard crating materials.

1.6 INSTALLATION

Prior to moving the Quickchiller to the installation site, check the dimensions of doors, passageways, and ceiling heights in the areas through which the cabinet must be moved. Also check the turning radius if the cabinet must be moved around an existing structure.

Note: In certain instances, it may be necessary to remove doors and door hardware to negotiate tight spaces.

1.6.1 SITE SELECTION: Position the Quickchiller to allow sufficient air ventilation through the condensing unit(s). Rear of unit should be no closer than 6" to any wall or structure.

Avoid installing the chiller immediately adjacent to fryers, charbroilers, or any other equipment producing grease laden air; heat producing equipment such as ovens and ranges; and steam discharging equipment such as steamer ovens and kettles.

Allow sufficient front clearance for serviceability and for easy maneuvering of food trolleys in and out of the cabinet.

1.6.2. INSTALLATION REQUIREMENTS: Install the Quickchiller on smooth and level floor surface. Use the adjustable cabinet legs to level the unit.

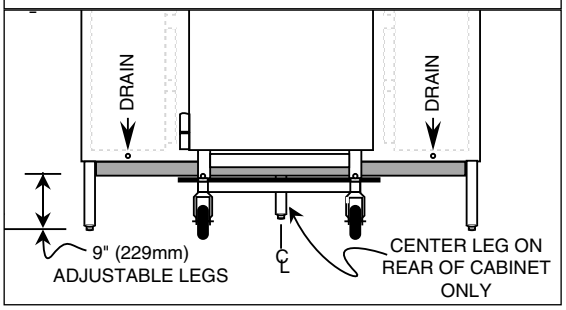
Adjust from front-to-back and from side-to-side to evenly distribute the cabinet weight and avoid pulling the cabinet alignment out of square.

After leveling the cabinet, check the height relationship of the roll-in cart to the cabinet. Adjust Quickchiller height as needed.

1.6.3 DOOR SEAL: Check the door gasket to make certain it is sealing properly and that the gasket provides an even and positive seal around the entire door frame.

1.6.4 DRAIN HOSE: Two drain hoses and a floor drain are required.

FIG. 1.6.4 PLUMBING: MODEL QC-100



1.6.5 REMOTE CONDENSING UNIT GUIDELINES **Installation must be performed by certified and authorized refrigeration service personnel or warranty is void.**

Interconnecting liquid and suction line sizes for Quickchillers are as follows:

QUICKCHILLER MODEL	CONDENSING UNIT	LIQUID LINE SIZE	SUCTION LINE SIZE
QC-40R	Both	1/4"	3/8"
QC-50R	Large	3/8"	7/8"
	Small	3/8"	5/8"
QC-100R	Both	3/8"	7/8"

Separation distance between the Quickchiller and condensing units must not exceed fifty (50) feet with zero (0) lift. Liquid line lift (Quickchiller elevation above that of condensing unit) reduces allowable separation distance significantly.

Satisfactory refrigerating capacity is possible with condenser entering air temperatures below 115°F.

Insulate both suction and liquid lines.

Suction lines should be pitched down 1/2" in 10' of run in the direction of flow. A "P" trap (closely) connected) is required for vertical risers greater than 3 feet in elevation.

1.6.6 ELECTRICAL: The Quickchiller must be installed by a qualified electrician. This appliance must be branch circuit protected with proper ampacities in accordance with the wiring diagram located in this manual. In the U.S.A., the chiller must be properly grounded in accordance with the National Electrical Code and applicable local codes.

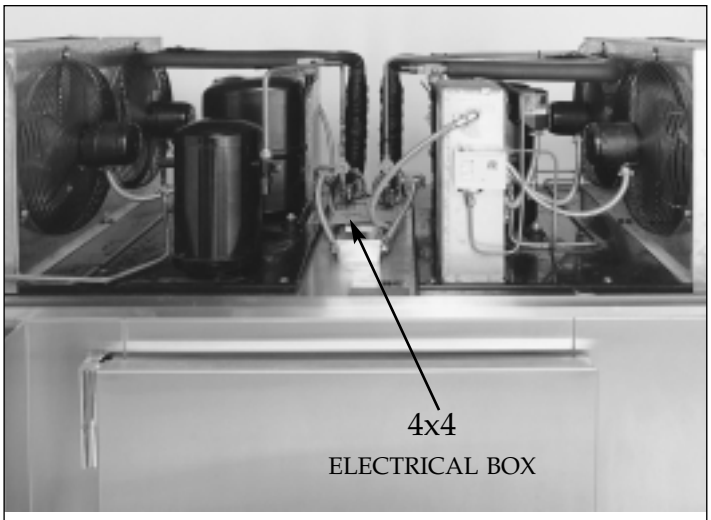


FIG. 1.6.6.a
ELECTRICAL: Model QC-100 SELF-CONTAINED

ENSURE THE AVAILABLE POWER SOURCE MATCHES THE VOLTAGE STAMPED ON UNIT NAMEPLATE

CAUTION

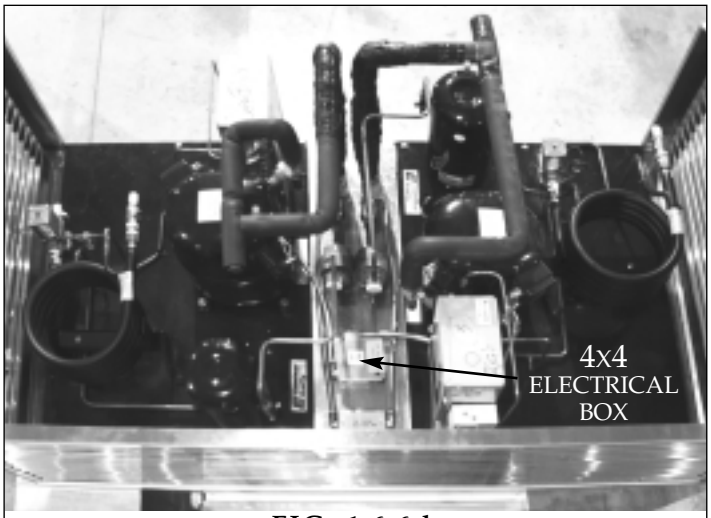


FIG. 1.6.6.b
ELECTRICAL: Model QC-100 WATER COOLED

1.6.7 All electrical connections have been made and tested by the factory. It is necessary to hard wire the cabinet by installing the proper power cord and making connections (3 wire, L_1, L_2, and GND [EARTH]) in the 4x4 electrical box located on the top rear center of the unit. See Fig. 1.6.6.

1.6.8 Before making the electrical connection read Section 1.6.9 through 1.6.11 and refer to wiring diagram for appropriate unit located in the back of this manual.

1.6.9 The Quickchiller utilizes a 24 Volt control system with step-down transformer. The primary side of the transformer is factory wired for a 240 Volt power supply. Check the supply voltage on the branch circuit servicing the Quickchiller. If the supply voltage is 218 Volts or greater, skip Section 1.6.10, and proceed per Section 1.6.11.
If supply voltage is less than 218 Volts, proceed per Section 1.6.10.

FAILURE TO CORRECTLY CONNECT THE CONTROL TRANSFORMER WILL RESULT IN ERRATIC CONTROL OPERATION AND CONTROL DAMAGE.

CAUTION

1.6.10 For supply voltage less than 218 Volts, proceed as follows. Open the control box door. Locate the control transformer. Disconnect the orange (240V) transformer wire from the terminal block. Remove the wire nut from the red (208V) transformer wire and install wire nut to the end of the orange wire. Connect the red wire (208V) to the terminal block.

1.6.11 Make certain the branch circuit breaker (main electrical panel) and Quickchiller circuit breaker are in their OFF position. Also make certain the available power matches the Quickchiller power requirements.

1.6.12 Complete electrical connections to the Quickchiller.

2.0 — Control Set-Up and Operation

2.1 START-UP PROCEDURES

2.1.1 Place the branch circuit breaker (main panel) in the ON position. Then place the Quickchiller circuit breaker in the ON position.

2.1.2 The Main Menu screen must appear on the Control display (see figure 2.1.3). If the Main Menu screen appears, skip Sections 2.1.3 thru 2.1.5 and proceed with SET-UP per Section 2.2. If the Main Menu screen does not appear, proceed with Section 2.1.3.

NOTE: BACK-UP BATTERY POWER

The Quickchiller control back-up battery is fully charged prior to Quickchiller shipment and will maintain control memory for approximately fourteen (14) days.

2.1.3 The control display will show "SYSTEM INITIALIZED" and an audible alarm will sound for 30 to 60 seconds. Leave the unit alone for two (2) minutes.

2.1.4 Turn the Quickchiller circuit breaker OFF. Leave the unit OFF for 30 seconds.

2.1.5 Turn the Quickchiller circuit breaker ON again. The Main Menu screen on the display should now appear.

2.2 SET-UP

2.2.1 Make certain the main menu appears on the control display (LCD) when power is supplied to the unit.

2.2.2 Access the Password screen: Press and hold the "0" button on the keyboard for a period of 5 seconds. When the Password Entry screen is in view, enter the password number on the numerical keyboard.

Password
5588744

Following password entry, press "D" on the keyboard to access the User Setting Menu screen. If the wrong password number is entered in error, "Access Denied" will appear in the display. If it remains in the display longer than 60 seconds, the locked control panel cover must be opened and the yellow reset button pressed ONCE. Relock the control panel and enter the correct password to gain access to the User Setting Menu screen.

2.2.3 Select option "B" and set the correct time and date.

NOTE: TWENTY-FOUR (24) HOUR TIME OR MILITARY TIME IS REQUIRED.
1:00 PM = 1300 MILITARY TIME

Following entry, press "C," immediately followed by "D" to return to the Main Menu screen. (FOR ADDITIONAL INFORMATION SEE BOOKLET NO. 265, *Quickchiller Operating Procedure Guide,* SECTION 7.0 USER SET-UP.)

2.2.4 Press and hold the "1" button on the keyboard for a period of five (5) seconds. The Software Version screen will appear. Quickchiller Model QC-100 must appear. If Model QC-100 appears, proceed with Section 2.3. If Model QC-100 does not appear, proceed with Sections 2.2.5 through 2.2.7.

2.2.5 Press and hold the "0" button on the keyboard again until Password Entry screen appears. Enter password number on the numerical keyboard.

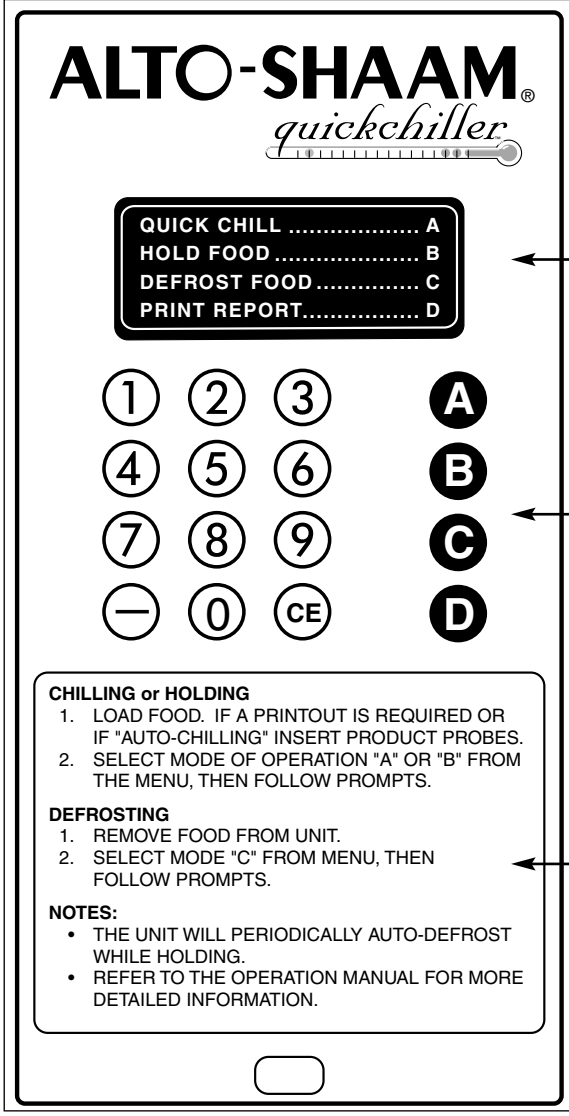
Password
16021892

Press "D" button to access Set-up Menu Screen.

2.2.6 Select option "C" and set correct Chiller Model to "QC-100" using the "C" button. Following entry, press "D", and press "D" again to return to Main Menu screen.

2.2.7 The QC-100 is now ready for operation.

FOR A COMPLETE AND COMPREHENSIVE GUIDE TO THE OPERATION OF THE QUICKCHILLER SEE
BOOKLET NO. 265,
Quickchiller Operating Procedure Guide


ALTO-SHAAM®
quickchiller
QUICK CHILL ..... A
HOLD FOOD ..... B
DEFROST FOOD C
PRINT REPORT..... D
1 2 3 A
4 5 6 B
7 8 9 C
— 0 CE D
CHILLING or HOLDING
1. LOAD FOOD. IF A PRINTOUT IS REQUIRED OR IF "AUTO-CHILLING" INSERT PRODUCT PROBES.
2. SELECT MODE OF OPERATION "A" OR "B" FROM THE MENU, THEN FOLLOW PROMPTS.
DEFROSTING
1. REMOVE FOOD FROM UNIT.
2. SELECT MODE "C" FROM MENU, THEN FOLLOW PROMPTS.
NOTES:
• THE UNIT WILL PERIODICALLY AUTO-DEFROST WHILE HOLDING.
• REFER TO THE OPERATION MANUAL FOR MORE DETAILED INFORMATION.

MICROPROCESSOR CONTROL

The Alto-Shaam® Quickchiller™ includes a microprocessor control panel which utilizes a menu screen to guide the operator through all operation mode sequences.

MENU SCREEN
— MAIN MENU SHOWN

CONTROL KEYBOARD

QUICK REFERENCE OPERATION GUIDE

Fig. 2.1.3

2.3 START-UP TEST

2.3.1 With the chiller door closed, test the door buzzer and door switch by entering the hold cycle. Press "B" on the keyboard when the Main Menu screen appears on the display. The compressor will become audible. After a period of 60 seconds, open the unit door. A buzzer should sound and the display will prompt the operator to close the door.

2.3.2 Close the door and allow the unit to operate for approximately 10 minutes. Verify the operating time with the timer which appears in the upper right-hand corner of the Hold Mode display screen. If the timer does not indicate the correct amount of time, begin the SET-UP procedure once again.

2.3.3 With the food probe(s) remaining in the appropriate holder (no product) verify a decrease of the temperatures appearing in the display. The temperatures displayed should start at the approximate room temperature and decrease from that point. If any of the temperatures displayed are above 120°F (49°C), considerably above normal room temperature, contact the Alto-Shaam Service Department.

2.3.4 Following the 10 minute test operation period, press "D" on the keyboard to exit the hold mode. Open the unit door and make certain the interior walls of the unit are cold.

2.4 SEQUENCE OF CONTROL OPERATION

2.4.1 Refer to Tables 2.4.1 and 2.4.2 for an overview of control operations. For more information, refer to booklet No. 265, *Quickchiller Operation Procedure Guidelines.*

Table 2.4.1

CONTROL MODE OVERVIEW

Mode	Operation Description
Auto Chill	Refrigeration is controlled only by the food probe(s). Refrigeration continues until all food probes achieve chill setpoint temperature, whereupon the control automatically enters HOLD Mode.
Timed Chill	Refrigeration is controlled by chill time entered and the cabinet air sensor. While chilling, the cabinet air temperature may become excessively cold prior to chill time expiration. The cabinet air sensor will then cycle the refrigeration system OFF and ON, at cabinet air temperatures of 15°F (-9°C) and 20°F (-7°C) respectfully, until chill time expiration. The control automatically enters Hold Mode upon chill time expiration.
Hold	Refrigeration is controlled by the cabinet air sensor only.
Auto Defrost	Only the evaporator coil defrost heaters are operational with a 20 minute time limit. A coil mounted defrost heater terminator switch (thermal) limits the coil temperature to 60°F (15°C) maximum until 20 minutes expire. Auto Defrost occurs automatically after six (6) hours of continuous evaporator fan operation. The six hour "count-up" is overridden in either Chill Mode.
Manual Defrost	Can only be selected in the HOLD Mode. See Auto Defrost for operation. Upon completion of a manual defrost, the Quickchiller will not automatically default to the Hold Mode. Control mode selection is required.

NOTE: For optimum performance, utilize Manual Defrost at the start and end of each service day

Table 2.4.2

EVAPORATOR FAN, DOOR HEATER & CONDENSING UNIT OPERATION

OPERATION SPECIFICS

Evaporator Controlled by door switch and evaporator coil mounted for terminator switch (thermal).

Fan(s) OFF when door is opened.

OFF with coil temperature above 60°F (15°C).

ON with coil temperature below 30°F (-1°C).

Door Heater ON and OFF with evaporator fan(s).

Condensing Unit(s) Controlled by a low pressure switch (cut-out @ 2 PSIG, cut-in @ 18 PSIG).

Upon control mode satisfaction, the liquid line solenoid valve closes to begin a low side pump-down with condensing unit shutoff at 2 PSIG.

Upon call for refrigeration, the liquid line solenoid valve opens which increases low side pressure to condensing unit start at 18 PSIG. Refer to Section 2.7, Shut-Down Procedure for additional details.

NOTE: The RTD sensor(s) mounted to the evaporator coil serves no controlling purpose and is for displaying coil temperature for reference only.

2.5 MAIN MENU

The main menu is the starting point for all functions of the Quickchiller. This includes starting the hold, defrost, and chill cycles; report printing; and changing the system configuration.

There are four main options shown on the main menu screen. These options are selected with control keyboard buttons "A" through "D." The remaining options are initiated by holding down a number button for 5 seconds. These options are used to test the chiller, and to view or change the configuration of the chiller. (FOR ADDITIONAL INFORMATION SEE BOOKLET NO. 265, *Quickchiller Operation Procedure Guide, Sections 7 & 8.)*

MAIN MENU SCREEN

```
QUICK CHILL . . . . . A
HOLD FOOD . . . . . B
DEFROST UNIT . . . . . C
PRINT REPORT . . . . . D
```

2.5.1 Hold Mode

To immediately enter the *hold food* mode, press "B" on the keyboard when the Main Menu screen is displayed.

The unit will activate and the chiller will bring the cavity temperature within a few degrees of the hold set-point.

HOLD MODE SCREEN

```
UPPER:    40F    00:20:30
  MID:    38F
LOWER:    36F
 HOLD:    38F    STOP=D
```

The labels "UPPER," "MID," and "LOWER" all refer to the internal food probes. The screen displays the current temperature of these probes in either Celsius or Fahrenheit. The length of time the hold cycle has been active is shown in the upper right corner of the screen.

2.5.2 Open Door

If the door is opened while the chiller is in the hold mode, a buzzer will sound and a warning message will appear in the display.

DOOR OPEN WARNING SCREEN

```
WARNING:
*** UNIT HOLDING ***

PLEASE CLOSE DOOR!
```

A variation of this warning message will appear in the display when the door is opened in any cycle; hold, chill, or defrost. The precise time the door is opened is recorded in memory and can be obtained on a print-out.

2.6 OPERATION WITH FOOD PRODUCT

Stage 1:

Prior to introducing product to the cabinet, the unit should be operated in the timed chill mode for thirty minutes. This procedure will reduce the temperature of the interior components and the cabinet air sufficiently to be able to accept hot food products.

Stage 2:

Roll the roll-in cart into the Quickchiller, select mode and start operation.

Stage 3:

At a factory adjusted set-point the smaller condensing unit will cycle OFF allowing the larger system to continue the temperature pull down process.

Stage 4:

Upon satisfaction of the Chill Mode selected, the system will revert to the hold mode.

Stage 5:

Once the system has run through prolonged or consecutive quick chill cycles, it may be advisable to place it through a manual defrost.

The system will automatically defrost in the hold mode — BUT ONLY IN THE HOLD MODE. A manual defrost can be initiated and, depending on unit usage, may be necessary to maintain proper operation.

Adequate spacing must be allowed between pans for proper air circulation for both the chilling function and subsequent storage.

2.7 SHUT-DOWN PROCEDURE

The Quickchiller can be shut-down at the end of the production day whenever any menu screen which includes STOP=D is displayed.

Before starting unit shut-down, make certain all product has been removed from the unit. Press "D" on the keyboard to begin shut-down.

UPPER:	40F	(DONE)
MID:	38F	(DONE)
LOWER:	36F	(DONE)
HOLD:	38F	STOP=D

The unit will display a Stop Prompt screen as a safeguard against accidental shut-down.

ARE YOU SURE?

YES C

NO . . . . . .D

NOTE: THE CONDENSING UNIT(S) WILL SHUT OFF IMMEDIATELY, BYPASSING THE LOW PRESSURE SWITCH. NO PUMP-DOWN WILL OCCUR.

Press "C" on the keyboard to continue shut-down. The Main Menu Screen will appear in the display.

MAIN MENU SCREEN

QUICK CHILL . . . . . .A

HOLD FOOD . . . . . .B

DEFROST UNIT C

PRINT REPORT . . . . . .D

The Quickchiller will be ready for start-up as required and will be fully operational after allowing 40 minutes to pre-chill before resuming operations with product.

For prolonged periods of shut-down, thoroughly clean and sanitize the interior and exterior of the unit with a mild detergent diluted in warm water. Maintain the Quickchiller circuit breaker and branch circuit breaker (Main Panel) in their ON positions to preserve control data memory. If power is terminated for more than fourteen (14) days, and control data memory is lost, refer to Control Set-Up and Operation, Section 2.0.

2.8 HARDWARE NOTES

NOTE: Refer to Operation and Procedure Guide, Section 9.0.

SERIAL PRINTER:

The printer MUST have an internal buffer of at least 1K bytes. Since the printer must be able to maintain the same pace as the control, and there is no printer handshaking, printers with smaller buffers simply cannot keep up. The printer must also conform to RS-232 standards and must be able to print using only the TX and GND lines (i.e., without hardware handshaking or software handshaking (XON/XOFF). Nearly all serial printers can print without handshaking. The printer should be connected to the control with a NULL serial cable.

RECOMMENDED:

Star Micronics PN# DP-8340 FM

Alto-Shaam Serial Printer & Cable Package PN#14218

PARALLEL PRINTER:

Any EPSON, IBM PRO-PRINTER or compatible is acceptable.

The internal buffer should be at least 1K byte. Most of the newer printers have at least this amount or more. A standard printer cable is required. It is not necessary to use a printer with 24 pins or special graphic capabilities. Alto-Shaam Parallel Printer Cable (part number 14709) is recommended to connect parallel printer to Quickchiller control .

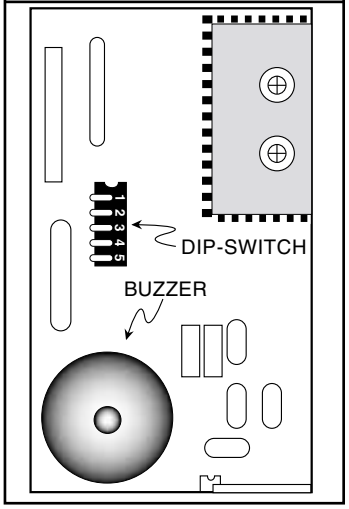
DIP SWITCH:

The dip-switch is located on the CPU board. It is read by the software each time the main menu is entered. Changing the settings while at the main menu will not effect a change until the main menu is exited and reentered.

When taking advantage of the special feature program options, we strongly recommend individuals with an electronics background to properly locate and change dip-switch position. *Refer to Operation and Procedure Guide, Section 8.1.*

SWITCH	FUNCTION	OFF	On
1	Language	English	Spanish
2	Reserved	—	—
3	Reserved	—	—
4	On-Line Print	NO	YES
5	Reserved	—	—

FIG. 2.8 - CPU BOARD
(PARTIAL VIEW)
DIP-SWITCH LOCATION



AT-A-GLANCE QC-100 CONTROL SETTINGS

PRINTER			
Printer Interface	=		Serial
Baud Rate	=		4800
Stop Bits	=		1 bit
Printing Delay	=	40	[40]
Sample Period, min.	=	5	[5]
Print Grid Spacing	=	5	[5]
Print Grids	=		YES
Printer Columns	=		[40]
BUZZERS/TIMEOUTS			
Probe Mute Time, sec.	=	30	[30]
Chill Done Time, sec.	=	60	[60]
Are-U-Sure Time, sec.	=	20	[20]
DefrstDone Time, sec.	=	60	[60]
Probe Mute Buzzer	=	0	[0]
Chill Done Buzzer	=	1	[1]
Are-U-Sure Buzzer	=	2	[2]
Defrost Done Buzzer	=	3	[3]
HOLDING			
Hold Set-point, C	=	3	[3]
Hold Offset, 0.1C	=	0	[0]
Hold Low Offset, 0.1C	=	6	[6]
Hold Med Offset, 0.1C	=	4	[4]
HoldHigh Offset. 0.1C	=	4	[4]
CHILLING			
Probe 1 Set-point, C	=	4	[4]
Probe 2 Set-point, C	=	4	[4]
Probe 3 Set-point, C	=	4	[4]
Chill Set-point, C	=	-6	[- 6]
Chill Offset, 0.1C	=	0	[0]
ChillLow Offset. 0.1C	=	8	[8]
ChillMed Offset, 0.1C	=	8	[8]
ChillHi Offset. 0.1C	=	8	[8]
DEFROSTING			
Automatic Defrost	=		YES
AutoDefrst Per. 5min	=	72	[72]
DefrstWarnTime, 10min	=	60	[60]
Coil1 Defrost End. C	=	16	[16]
Coil2 Defrost End, C	=	16	[16]
Defrost Time, min	=	20	[20]
MISC			
Chiller Model	=		QC-100
Compressor Mode	=		CPU CNTR
Number Compressors	=		TWO
Power Throttle	=		YES
Temp Cycling	=		YES
RTD Offset, 0.1C	=	0	[0]
Power Down Minutes	=	1	[1]
Temperature Units	=		Farhen
Time Format	=		HH:MM
Fan Cut-in Temp, C	=	4	[4]
Fan Cut-Out Temp, C	=	13	[13]
KeyBoard Buzzer	=		ON
Device Access Number	=	49	[49]

NOTE: [ ] = DEFAULT VALUES

3.0 — Cleaning & Maintenance

3.1 INTRODUCTION

To insure trouble free operation and the highest level of sanitation control, periodic cleaning and maintenance is required. The maintenance system should be aimed at maximizing the efficient utilization of maintenance personnel, minimizing down time, and providing the orderly acquisition of spare parts for support. If already established at the location site, perform scheduled maintenance in accordance with the standards in the Maintenance Index Plan.

The Alto-Shaam® Quickchiller should be cleaned and sanitized a minimum of once a week. Good equipment that is kept clean works better and lasts longer. Protect your investment.

Always follow appropriate state or local health (hygiene) regulations regarding all applicable cleaning and sanitation requirements for equipment.

WARNING

DEACTIVATE THE SYSTEM BY DISCONNECTING THE POWER SUPPLY BEFORE PERFORMING ANY CLEANING OR MAINTENANCE WHICH INVOLVES PLACING HANDS NEAR MOVING PARTS.

3.2 INTERIOR CLEANING

Disconnect unit from power source. Remove the slide-in pan rack and rack-track and leave the door open to warm the interior of the cabinet.

1. Remove any loose food debris from cabinet with a cleaning cloth or small hand broom.
2. Wipe down the interior of the cabinet with a damp cloth and any good alkaline or alkaline chlorinated based commercial detergent or grease solvent at the recommended strength. Use a plastic scouring pad for difficult areas. Avoid the use of abrasive cleaning compounds, chloride based cleaners, or cleaners containing quaternary salts.

   Be sure to clean the ceiling, floor, walls and fan panel. Clean the vinyl gaskets and the interior door panel. Make certain to clean under the gaskets to remove any mildew accumulation or food residue.

3. Rinse everything with clean water and cloth to remove all residue. Allow cabinet interior to air dry with the door open.

3.3 EXTERIOR CLEANING

Disconnect unit from power source.

1. Wipe all exterior surfaces including the control panel, door frame, latches, and hinges with a damp cloth containing a mild, non-abrasive detergent solution without chlorine. Rinse with cloth and warm water Allow to air dry.
2. To help maintain the protective film coating on polished stainless steel, clean the exterior with a cleaner recommended for stainless steel surfaces. Spray the cleaning agent on a cloth and wipe with the grain of the stainless steel.
3. Avoid an accumulation of oil based polish or cleaner collecting along the edges of the keyboard overlay on the control box. Oil build-up around the control overlay could eventually loosen the panel.

CAUTION

CAUTION

DO NOT USE SPRAY OR PRESSURE HOSE CLEANING TECHNIQUES ON THE EXTERIOR OR INTERIOR OF THE CABINET. WATER DAMAGE CAN OCCUR TO THE CONTROL SYSTEMS.

3.0 — Cleaning & Maintenance

3.5 EVAPORATOR CONDENSATE DRAIN HOSE INSPECTION AND CLEANING

1. Every 4-6 months, the evaporator coil and condensate drain hose should be inspected for blockage due to spilled food and sauces which can accumulate about the base of the coil and clog the entrance to the drain hose.
2. With the Slide-In-Pan-Rack and Rack Track removed, remove the two screws at the bottom sides of the storage compartment. Remove the cover to expose the evaporator coil. Inspect the base of the coil for food spillage, condensate pooling and evaporator coil ice. If this area is free of contaminants, cleaning is not required. If cleaning is required, proceed with step 3.
3. To clean the base of the coil and drain hose, first remove larger food particles by hand. From the rear of the unit, locate the drain hose, remove the free end from the condensing unit drain pan and place it into a bucket. Flush the base of the coil and drain hose with very hot water until clean.
4. Return the free end of the drain hose to the condensing unit drain pan.
5. Re-install the cover and screws.

3.6 MONTHLY COMPRESSOR AND CONDENSER MAINTENANCE

Keep the condenser coils free of dust and debris to insure proper air circulation and cooling of the refrigeration system.

1. Turn power supply to the cabinet OFF by switching the circuit breaker switch on the main breaker panel to the OFF position. Remove the front grille.
2. Using a vacuum or small hand broom, brush the condenser coils in a vertical motion to remove any accumulated dust or debris.
3. Replace air grill and return main circuit breaker switch to the ON position.

WARNING

DEACTIVATE THE SYSTEM BY DISCONNECTING THE POWER SUPPLY BEFORE PERFORMING ANY CLEANING OR MAINTENANCE WHICH INVOLVES PLACING HANDS NEAR MOVING PARTS.

3.4 SLIDE-IN PAN RACK AND RACK TRACK CLEANING

1. Clean, using a brush, damp cloth and any good alkaline or alkaline chlorinated based commercial detergent or grease solvent at the recommended strength.
2. Hand wipe all framing and pan rails. Thoroughly clean debris from the wheels. A spray hose can be used for easier rack cleaning. Rinse with warm water.
4. Wipe or spray with a sanitizing solution designed for use on metal and vinyl food contact surfaces.
5. Allow to air dry.

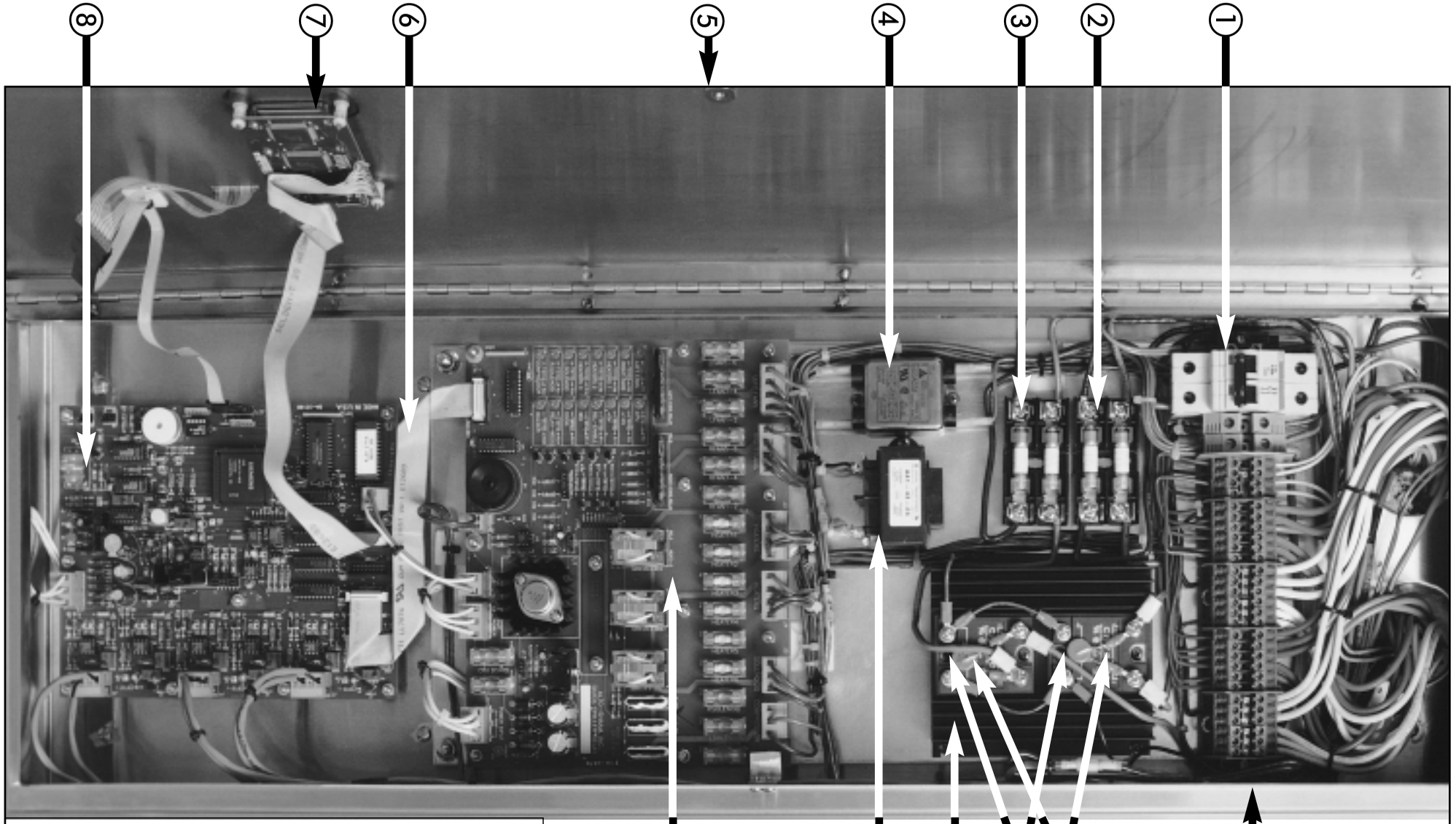
4.0 — Parts Identification

4.1 — QC-100 CONTROL & ELECTRICAL PARTS LIST

ITEM	DESCRIPTION	QUANTITY	PART NO.
1.	40A Circuit Breaker (On/Off)	1	Cosp PCCC50
2.	Compressor Fuse Blocks-15A (UPPER)	1	FU-3772
	— Fuses, 15A, Glass G	2	FU-3775
3.	Compressor Fuse Block-20A (lower)	1	FU-33239
	— Fuses, 20A, Class G	2	FU-33042
4.	Filter-EMF	1	FI-3580
5.	Door Lock	1	LK-23046
	Keys, Door Lock		LK-24176
6.	I/O Cable	1	CB-33154
7.	LCD Board Assembly	1	BA-33304
8.	CPU Board	1	BA-33100
9.	Door Gasket, 29" x 62-1/4" (737mm x 8581mm)	1	QGB60MV
10.	Relay (Self-contained Only)	2	RL-33246
11.	Relay Varister (Self-Contained Only)	2	RS-3578
12.	Heat Sink (Self-contained Only)	2	HE-23421
13.	Transformer	1	TN-33480
14.	Relay Board	1	BA-33099
ITEMS NOT SHOWN			
15.	Terminal Block, 3 Pole	1	BK-33111
16.	Defrost Heater	6	Cosp RWE104
17.	Defrost Heater Terminator Switch	6	CR-33387
18.	Door Heater	1	Cosp L2HR148
19.	Door Switch Magnet	1	MA-3739
20.	Door Switch	1	SW-33580
21.	Fan Terminator Switch	2	CR-33387
22.	Casters for roll-in cart, 5" rigid	2	CS-23126
	Casters for roll-in cart, 5" swivel	2	CS-23127

4.2 — QC-100 PROBES AND SENSORS

DESCRIPTION	QUANTITY	PART NO.
72" (1829mm) Food Probe Assembly	3	PR-3850
Cold Tube Sensor Kit , 1-3/4"	3	14786
Sensor Mounting Block	1	BK-22636



ITEM:	FIG. 4.1 — Control & Electrical Parts List			
MODEL:	QC-100 Quickchiller™ Processing Refrigeration System			
DATE:	04/16/01	**REV:**	**DWN BY:** LRL	**SCALE:**

ALTO-SHAAM®
MENOMONEE FALLS, WISCONSIN, U.S.A.

4.3 — QC-100 - REFRIGERATION PARTS LIST

ITEM	DESCRIPTION	QUANTITY	PART. NO.
1.	Condensing Unit (self contained)	2	Cosp RWC720
	Condensing Unit (water cooled)	2	Cosp RUX190
2.	Filter Dryer	2	Cosp RWFD03
3.	Sight Glass	2	Cosp RWSG02
4.	Solenoid Valve	2	Cosp RWSV04
5.	Solenoid Coil	2	Cosp RWSC02
6.	Evaporator Coil	6	Cosp RWE221
7.	Evaporator Fan Motor	12	Cosp LWEM16
8.	Expansion Valve (1/2 ton)	6	Cosp RWEV30
9.	Crankcase Pressure Regulator	2	Cosp RWCR01

4.4 — QC-100 CABINET & MISCELLANEOUS PARTS

ITEM	DESCRIPTION	QUANTITY	PART NO.
1.	Roll-in Cart	1	5815
2.	Shelves	10	SH-22473
3.	Side Grille Assembly	2	14706
4.	Front Grille Assembly	1	14707
5.	Leg, Adjustable, 9"	5	Cosp HLEG94
6.	Door Hinge	3	HG-22111
7.	Door Gasket	1	Cosp QGB60MV
8.	Door Assembly (LH hinge)	1	Cosp QDB60SL
9.	Door Assembly (RH hinge)	1	Cosp QDB60SR
10.	Door Switch Hardware Kit	1	14747
	INCLUDES:		
	Handle Insert	1	HD-23084
	Handle	1	HD-2934
	Door Latch	1	LT-2935
	Door Switch Magnet	1	MA-3739
	Nut	1	NU-22285
	Nut	1	NU-22286
	Screw	1	SC-22280
	Lock Washer	1	WS-22299

5.0 — Diagnostic and Repair Procedure

5.1 INTRODUCTION

The relays, which control the compressors, fans, solenoids, and heaters, can be individually controlled by the microprocessor control set in a manual mode. The following test will verify that these components are being controlled and will verify the operational integrity of the relays and fuse sets.

5.2 CONTROL DIAGNOSIS

The main menu is the starting point for this test. With the Main Menu screen displayed, press and hold "0" on the numeric keyboard for approximately 5 seconds to access the password screen.

PASSWORD ENTRY SCREEN

When the Password Entry screen is in view, enter the password code on the alphanumeric keyboard.

If the wrong password number is entered in error, a buzzer will sound and the display will revert to the Main Menu screen. Access the Password Entry screen again and enter the correct password number.

A correctly entered password will result in a diagnostic screen.

DIAGNOSTIC SCREEN

Pressing the numerical keyboard numbers 1 through 8 will toggle the power to an individual relay. Buttons 1 and 2 represent the two solenoid relays, while buttons 3 and 4 control the relays for each of the two fan banks. Buttons 5, 6, and 7 control the three relays which con-trol each pair of heater wraps. Button 8 controls two relays, each of which controls a single condensing unit.

5.2.1 SOLENOID CHECK:

Press button 1 and button 2 on the numeric keyboard several times. Each time these buttons are pressed the sound of the solenoids should be audible as they click open and closed. There should also be a distinct difference in the sound of an opening solenoid and a closing solenoid.

5.2.2 FAN CHECK:

Under normal operating conditions the fan(s) stop rotating whenever the chiller door is opened. Fan operation can only be verified with an open door in the manual mode. The evaporator coil temperature must also be below 30°F. Press button 3 followed by button 4 and open the Quickchiller door. The fans should be operating.

5.2.3 DEFROST HEATER CHECK:

Press button 5, 6, and button 7 once to detect the sound of the defrost heater relays as they click ON. Press each of these buttons once again to deactivate the defrost heaters. This procedure will only detect the coil side of each of the defrost heater relays but does not test the operational condition of the defrost heaters nor test the defrost heater fuses.

5.2.4 CONDENSING UNIT CHECK:

Press button 8 once to power both condensing units. The "compressor" relays are solid-state and will not produce an audible click, however; the compressors should be audible. After a short period of time, the compressors will automatically cycle OFF. Open the solenoids (see 4.2.1) and the compressors will again cycle ON. Close the solenoids.

5.2.5 COOLING TEST:

Open both solenoids (see 4.2.1) to activate the compressors. When the compressors are activated, press button 9. The display screen will indicate the temperature of the air probe, the three food probes, and the evaporator sensor. Allow the chiller to operate in this mode for approximately 10 minutes. The air temperature inside the food storage compartment should begin to fall. This cooling condition will be indicated on the display screen. If the food probe(s) do not appear to be functioning properly, hold the tip of the probe in your hand. The temperature display for the hand-held probe should slowly increase. Any of the probes which display an excessively high reading (~300 to 400F —149 to 204C) will indicate a broken connection or defective probe.

DO NOT ALLOW THE UNIT TO OPERATE UNATTENDED IN THIS MODE. THIS IS AN UNCONTROLLED COOL-DOWN MODE AND WILL EVENTUALLY CAUSE EXCESSIVE BUILD-UP ON THE EVAPORATORS.

5.3 CONDENSING UNITS

The condensing units operate only when the system is in a cooling mode and the food storage compartment requires a decrease in temperature. If it appears the condensing units are not functioning properly and the General Diagnostic Procedure (4.2.4) on the preceding page was unable to pinpoint the specific cause, the following steps should be taken for further diagnosis.

5.3.1 CONTROL CABLE CONNECTIONS:

Open the key lock on the alphanumeric keyboard display enclosure. Inspect each circuit board connection wire to be certain they are firmly attached to the board. Pay particular attention to the gray ribbon cable which originates through a hole behind the circuit board. This cable should be firmly attached to the black connector marked I/O CONNECTOR. The additional gray ribbon cable originating from the display should be firmly attached to the black connector marked LCD DISPLAY. The black connector marked PRINTER should only be connected if the original factory order specified a *parallel* printer port instead of the normal serial printer port.

If it is determined the control cable connections are secure, the problem may be related to a fuse, relay, or device failure. At this point in the diagnosis check the fuses.

5.3.2 CONDENSING UNIT FUSES:

Quickchiller condensing units, fans, heaters, and solenoids are fused with 20mm fuses. Fuses are located on the relay board which is mounted within the electrical enclosure.

WARNING

MAKE CERTAIN THE MAIN POWER IS **OFF** BEFORE SERVICING.

Disconnect main incoming A.C. power to the unit. When all power to the system is OFF, gain access to the electrical enclosure and remove the enclosure cover. Before removing the fuses, measure the voltage to make certain the power has been completely disconnected. Each of the two compressors have one fuse on L_1 and L_2 for a total of four fuses. Test each fuse with an ohm-meter and replace if necessary *only* with an identical fuse.

If the fuses do not require replacement or if the compressors still do not function, call the factory for assistance.

5.4 FANS, HEATERS, SOLENOIDS

If it appears the fans, heaters, or solenoids are not functioning properly and the General Diagnostic Procedure on the preceding page was unable to pinpoint the specific cause leading to repair, follow general directions prescribed for CONTROL CABLE CONNECTIONS and CONDENSING UNIT FUSES under the Condensing Unit heading on this page.

6.0 — REFRIGERATION — Troubleshooting

This chart is provided for the assistance of refrigeration technicians only and is not intended for use by untrained or unauthorized service personnel. If your Alto-Shaam Quickchiller is not operating properly, check the following **BEFORE** calling your Authorized Alto-Shaam Service Agent:

⇛ **Check the power flow to the unit. Fuses OK? Breakers OK?**

DO NOT ATTEMPT TO REPAIR OR SERVICE THE QUICKCHILLER BEYOND THIS POINT.

Contact Alto-Shaam for the nearest authorized service agent. These are the only service agents the company will authorize to repair Alto-Shaam Quickchillers. Repairs made by any other service agents without prior authorization by Alto-Shaam will void the warranty on the unit.

Compressor does not run

No electricity	Close start or disconnect switch
Fuse blown	Replace fuse
Control stuck open	Repair or replace
Frozen compressor	Replace
Off on high pressure	Determine cause of high pressure, make corrections, and reset high limit lock-out.

Unit short cycles

Control differential set too closely	Widen differential
Discharge valve leaking	Correct condition
Compressor overload cutting out	Check for high head pressure or clogged condenser coil
Shortage of refrigerant	Evacuate, capture remaining refrigerant, repair leak and recharge.
Leaky expansion valve	Replace
Refrigerant overcharge	Capture excess refrigerant

Unit operates long or continuously

Shortage of refrigerant	Evacuate, capture remaining refrigerant, repair leak and recharge.
Control contacts frozen	Replace control
Dirty condenser coil	Clean condenser coil
Location too warm	Change to cooler location
Plugged expansion valve or retainer	Clean or replace
Iced evaporator coil	Defrost or clean
Service load	Keep doors closed

Head pressure too high

Refrigerant overcharge	Capture excess refrigerant
Dirty condenser coil	Clean
Unit location too warm	Relocate unit

Fixture temperature too high

Refrigerant shortage	Evacuate, capture remaining refrigerant, repair leak, and recharge.
Control set too high	Reset control
Expansion valve or strainer plugged	Clean or replace
Expansion valve out of adjustment	Correctly adjust
Iced or dirty coil	Defrost or clean
Restricted gas lines	Clear restriction

Head pressure too low

Refrigerant shortage	Evacuate, capture remaining refrigerant, repair leak, and recharge.
Unit location too cold	None needed — efficiency is increased

Unit is very noisy

Improper unpacking	Remove shipping blocks and/or angles
Tubing rattle	Bend tubes away from point of contact.
Mountings loose	Tighten

Frosted liquid line

Receiver shut-off valve partially closed or restricted	Open valve or remove restriction
Restricted liquid line or component	Replace restricted part

Unit on vacuum — frost on expansion valve only

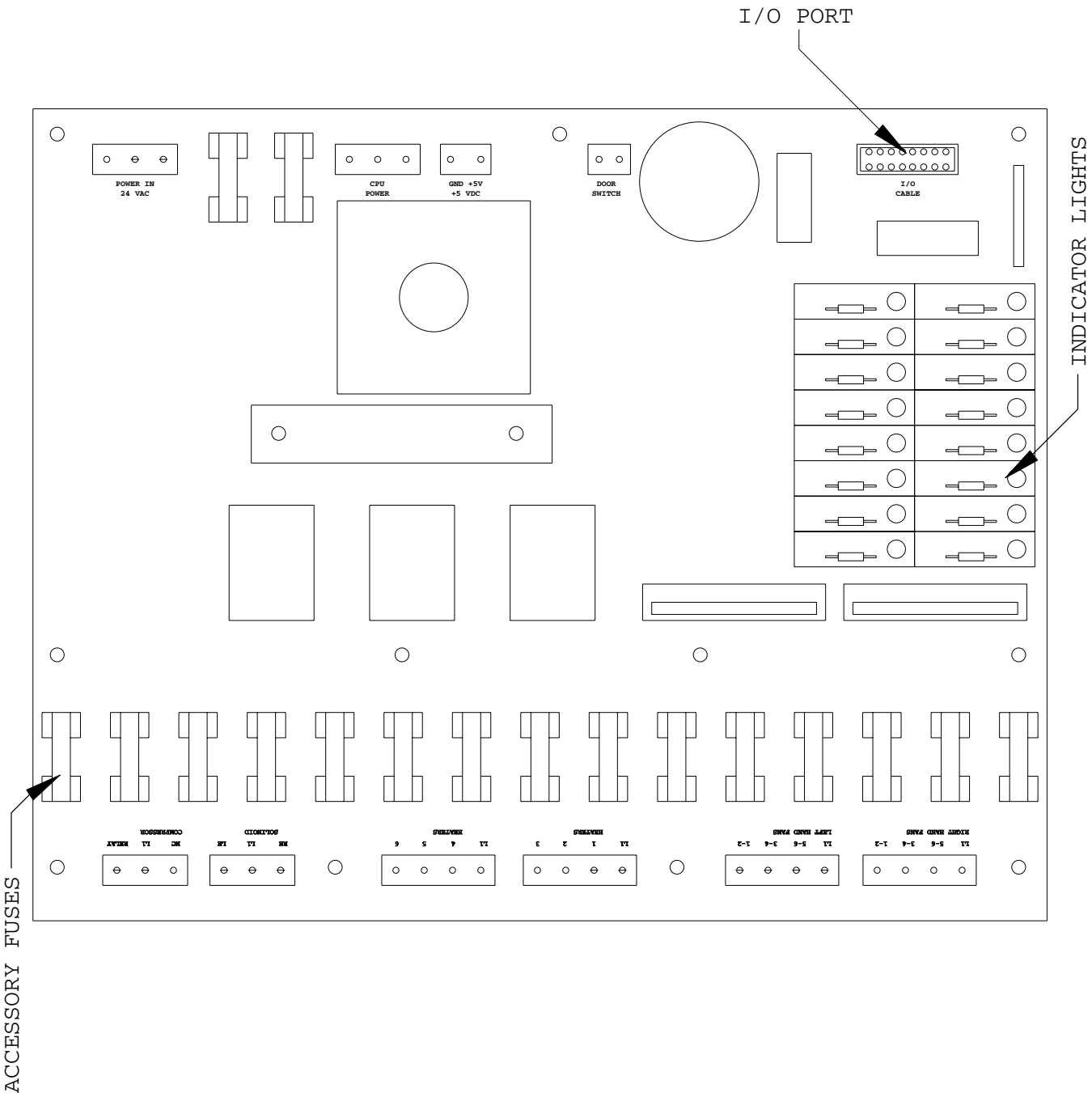
Ice in expansion valve orifice	Apply hot wet cloth to expansion valve; moisture indicated by increase in suction pressure; replace dryer
Restricted expansion valve strainer	Clean strainer or replace valve

SPECIAL INFORMATION:

Alto-Shaam, Inc. has a 5-year limited warranty on the Quickchiller™ compressor. This is included as standard from the date of the unit shipment. This warranty excludes labor.

6.0 — CONTROL — Troubleshooting

PROBLEM	POSSIBLE CAUSE	POSSIBLE SOLUTION
Alphanumeric display is blank. If power is connected to the unit and the main circuit breaker is on, the display on the control should be illuminated with a green tinged background.	Control needs to be reset. Control not receiving correct power. Power failure threshold is set too low. Control board is faulty.	Press the yellow reset button located within the locked keyboard door.
Unresponsive control. If the control does not respond to operator key presses or the screen on the display appears frozen or sluggish.	Control needs to be reset. Power failure threshold is set too low. Control board is faulty.	Press the yellow reset button
Control not receiving correct power. If the green light located on the middle bottom edge of the circuit board is **not** illuminated.	Loose connection Control transformer incorrectly wired.	1. Check connector J12 to the right of light along with other three connecting wires for secure connections. 2. Check the AC voltage across the two end wires on the connector with a voltmeter for a reading of 22 to 26 VAC. If there is no voltage or the voltage appears low, check power connector on the relay board inside electrical enclosure. Also check electronic filter, transformer, and the two fuses at the bottom of relay board. See installation instructions.
Power Failure Threshold is set too low.	The control continuously measures a fraction of the input power supplied to the unit. When this fraction drops below 1.25 - 1.30 Vdc (converted to DC) the control determines power is on the verge of failing, saves all important data to battery memory back-up, and prepares for a power failure.	Turn the trim-pot screw to adjust the amount of input power used by the control to determine power failure. 1. Open the locked keyboard and locate the blue trim-pot marked P12 just above the battery at the bottom of the circuit board. 2. Place voltmeter red lead on the pin-connector marked J22 (PFI) approximately 5" (127mm) under the blue trim-pot. 3. Place voltmeter black lead on the metal nut in the center of the board. 5. Adjust the trim-pot with a screwdriver until the voltage of the DC-Voltmeter reads 1.70 to 1.85 volts.
Electronic control operates but fans, heaters, and solenoids are not getting power.		Check connections on both ends of the control cable. Make certain there is power to the relay board.
No power to the relay board. If all or a portion of the four green lights on the relay board are **not** illuminated.	Relay board may not be receiving full power. One of the power supplies on the relay board may not be functioning. The power cable between the electronic control and the relay board may not be properly connected The control cable between the relay board and the electronic control may not be properly connected Control transformer may be incorrectly wired.	Check connections. Check electronic filter. Check the transformer. See installation instructions.
Excessive chill time. — Fans not operating.		Check the coil mounted fan terminator switch. Check the fan fuses. Check the connections between the fans and the relay board.
Manual defrost operational — automatic defrost does not function.		Verify set-up menu for automatic defrost is set at YES. See Booklet No. 265, *Cook/Chill Operation and Procedures.*
Manual and automatic defrost does not function.		Check heater fuses. Check the large, transparent, coil-type relays on the relay board and make certain each relay is secure in the socket.
Condensing units are not getting power or do not function.		Check the control cable for good connections. Check the over-pressure switch on the pressure control. This switch opens when an over-pressure occurs and must be manually reset. Check the compressor SC15 and SC20 fuses located in the fuse blocks on the left side-wall on the inside of the electrical enclosure. Check for a faulty solid-state compressor relay by measuring the voltage across the output side of the relay. If the voltage reads near zero, the relay is closed. If the voltage reads very close to line voltage, the relay is open. Open and close these relays using the diagnostic program (4.2) with a voltmeter to determine if the relay is opening and closing.
Display indicates Please Close Door with the door fully closed. **Unit will hold at refrigeration temperature but will not Auto-Chill.**		Adjust the door switch. Make certain the food probes are being inserted into the food BEFORE starting the auto-chill cycle.



ITEM:	Relay Board
MODEL:	Quickchiller Processing Refrigeration System
DATE:	04/04/97

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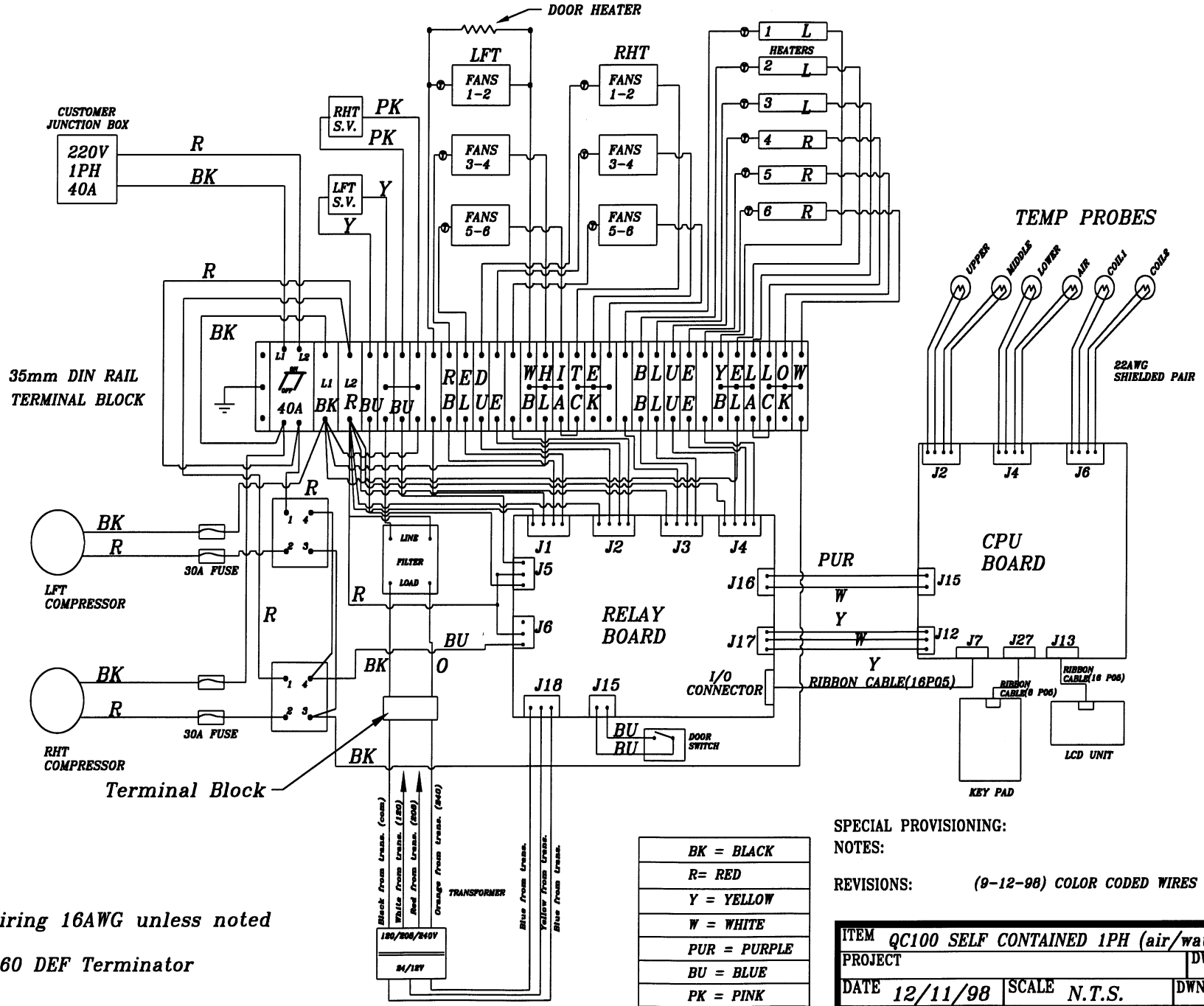
MENOMONEE FALLS, WISCONSIN 53051, U.S.A.



BK = BLACK
R= RED
Y = YELLOW
W = WHITE
PUR = PURPLE
BU = BLUE
PK = PINK
O = ORANGE

*All wiring 16AWG unless noted

Ⓣ ML60 DEF Terminator

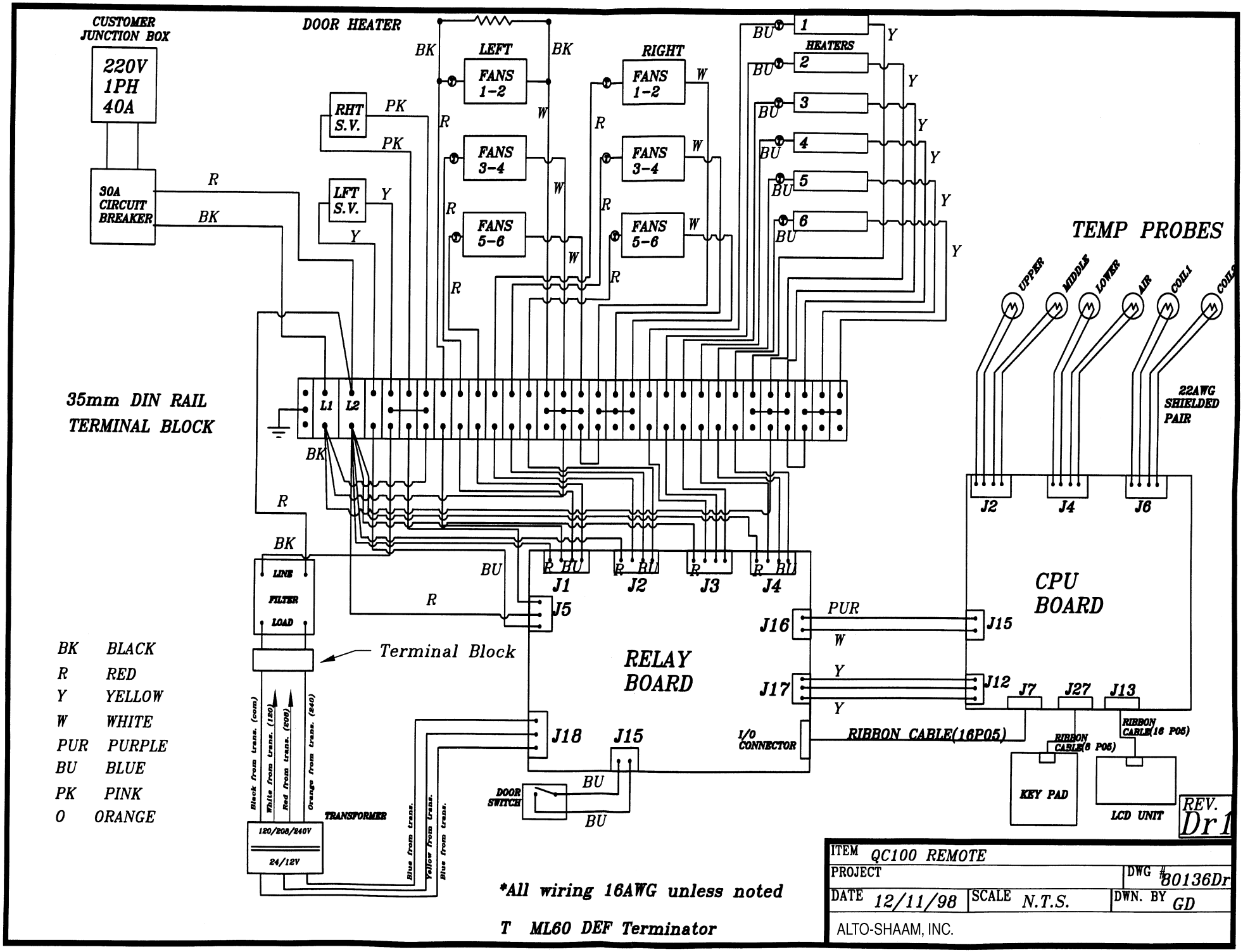
SPECIAL PROVISIONING:

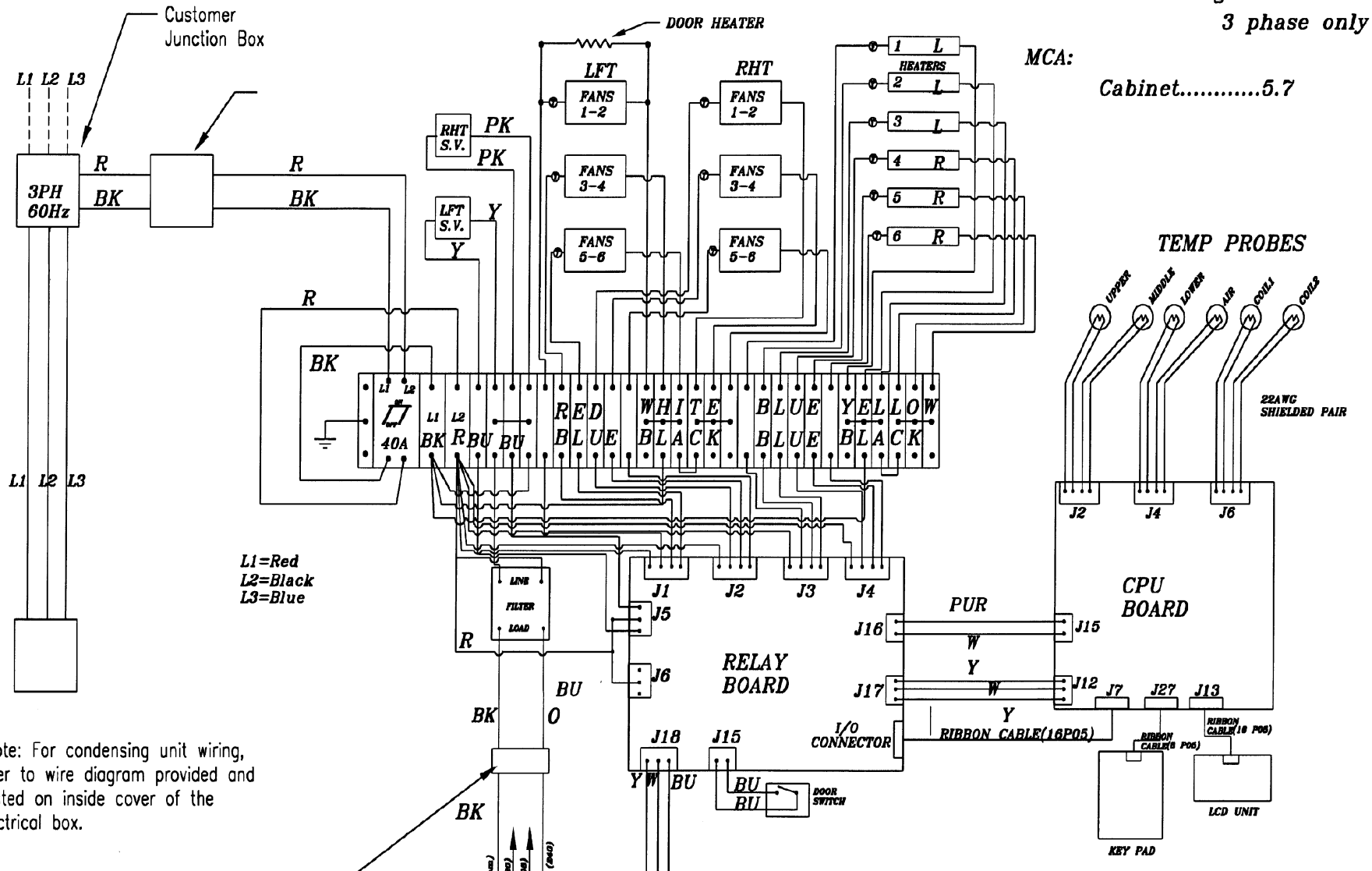
NOTES:

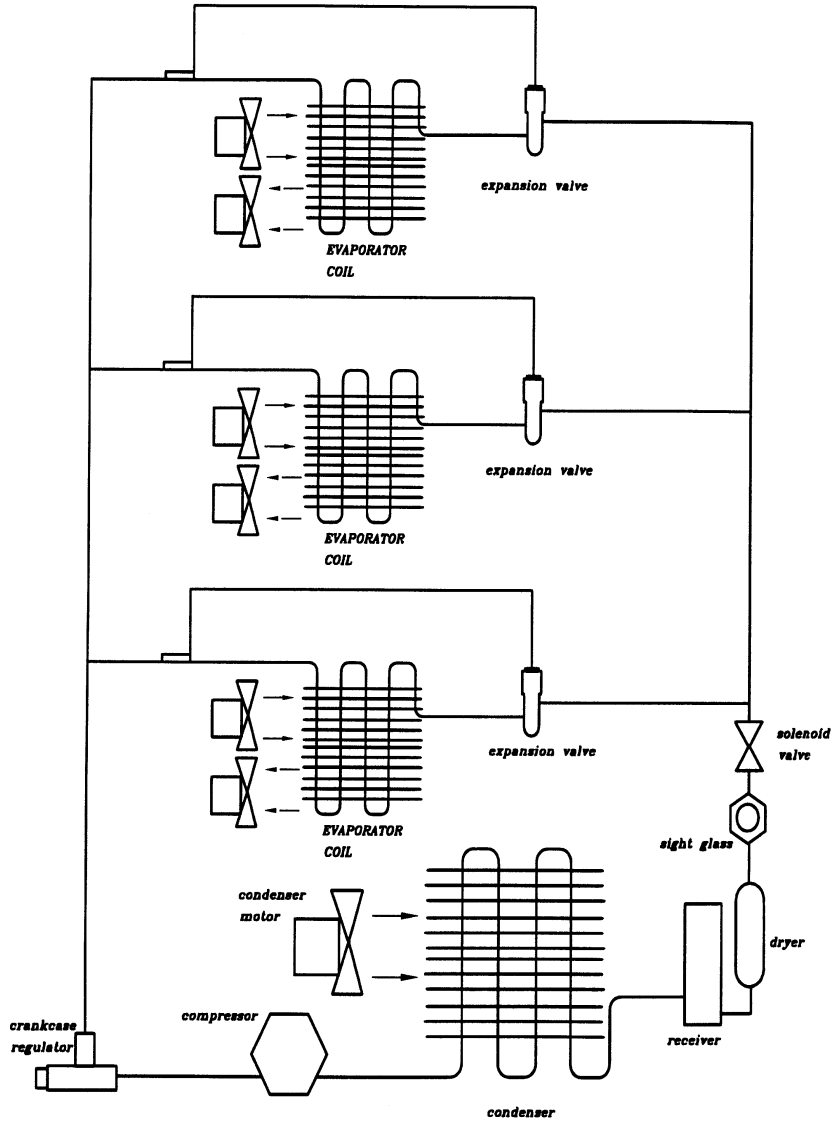
REVISIONS: (9-12-98) COLOR CODED WIRES

REV. D1

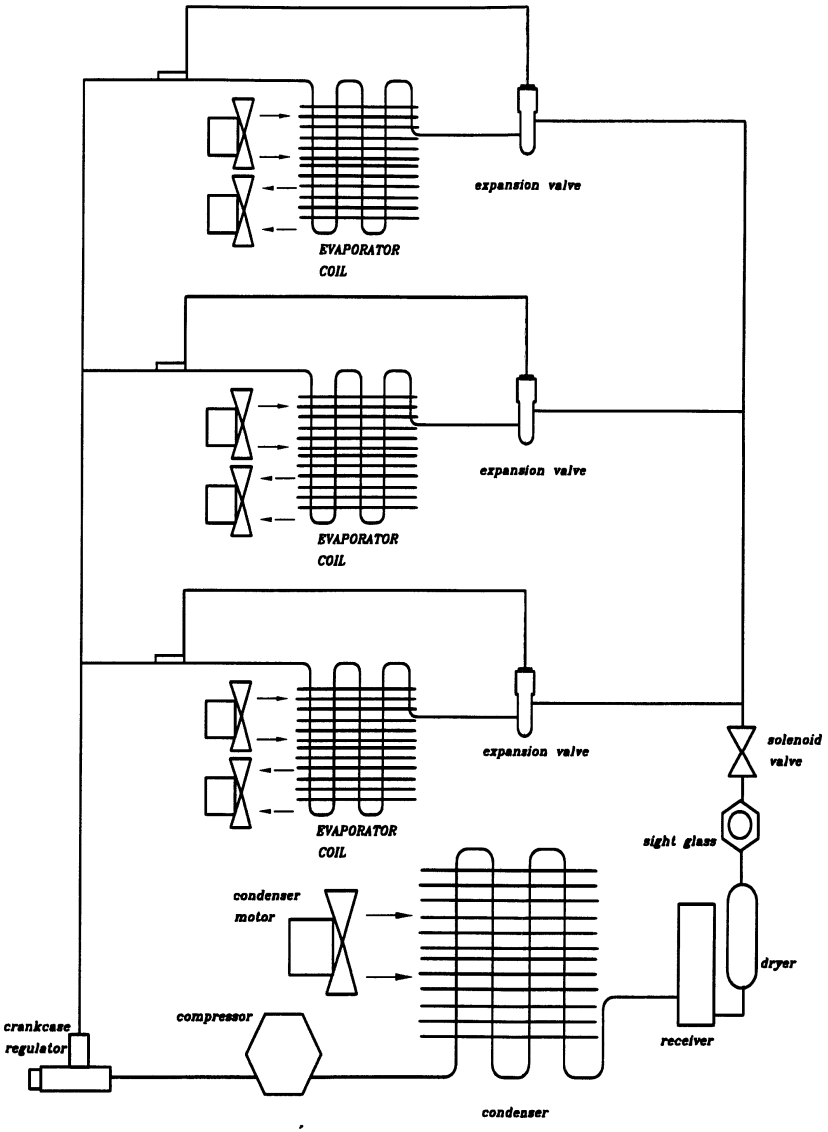
ITEM QC100 SELF CONTAINED 1PH (air/water cooled)		
PROJECT		DWG # 80135
DATE 12/11/98	SCALE N.T.S.	DWN. BY BMW
ALTO-SHAAM, INC.		


CUSTOMER JUNCTION BOX
220V 1PH 40A
30A CIRCUIT BREAKER
DOOR HEATER
RHT S.V.
LFT S.V.
LEFT FANS 1-2
FANS 3-4
FANS 5-6
RIGHT FANS 1-2
FANS 3-4
FANS 5-6
HEATERS 1 2 3 4 5 6
TEMP PROBES
UPPER
MIDDLE
LOWER
AIR
COIL1
COIL2
22AWG SHIELDED PAIR
35mm DIN RAIL TERMINAL BLOCK
L1
L2
LINE FILTER LOAD
Terminal Block
TRANSFORMER
120/208/240V
24/12V
Black from trans. (com)
White from trans. (120)
Red from trans. (208)
Orange from trans. (240)
Blue from trans.
Yellow from trans.
Blue from trans.
J1
J2
J3
J4
J5
J6
J2
J4
J6
RELAY BOARD
J16
J15
J17
J12
J7
J27
J13
J18
J15
I/O CONNECTOR
RIBBON CABLE(16P05)
CPU BOARD
RIBBON CABLE(16 P05)
RIBBON CABLE(6 P06)
KEY PAD
LCD UNIT
DOOR SWITCH
BK BLACK
R RED
Y YELLOW
W WHITE
PUR PURPLE
BU BLUE
PK PINK
O ORANGE
*All wiring 16AWG unless noted
T ML60 DEF Terminator
REV. Dr1
ITEM QC100 REMOTE
PROJECT
DWG # 80136Dr
DATE 12/11/98
SCALE N.T.S.
DWN. BY GD
ALTO-SHAAM, INC.


*Note: Condensing unit connection is 3 phase only
MCA:
Cabinet.....5.7
Customer Junction Box
L1 L2 L3
3PH 60Hz
R
BK
DOOR HEATER
LFT
RHT
FANS 1-2
FANS 3-4
FANS 5-6
RHT S.V.
LFT S.V.
PK
Y
HEATERS
1 L
2 L
3 L
4 R
5 R
6 R
TEMP PROBES
UPPER
MIDDLE
LOWER
AIR
COIL1
COIL2
22AWG SHIELDED PAIR
J2
J4
J6
40A
RED BLUE
WHITE BLACK
BLUE BLUE
YELLOW BLACK
L1=Red
L2=Black
L3=Blue
LINE FILTER LOAD
J1
J2
J3
J4
J5
J6
RELAY BOARD
CPU BOARD
PUR
W
Y
J16
J17
J15
J12
J7
J27
J13
I/O CONNECTOR
RIBBON CABLE(16P05)
RIBBON CABLE(8 P06)
RIBBON CABLE(10 P06)
LCD UNIT
KEY PAD
J18
J15
DOOR SWITCH
BU
O
YW
TRANSFORMER
Terminal Block
*Note: For condensing unit wiring, refer to wire diagram provided and posted on inside cover of the electrical box.
*All wiring 16AWG unless noted
T ML60 DEF Terminator
BK = BLACK
R= RED
Y = YELLOW
W = WHITE
PUR = PURPLE
BU = BLUE
PK = PINK
O = ORANGE
SPECIAL PROVISIONING:
NOTES:
REVISIONS:
REV. A
ITEM QC100 SELF CONTAINED 3PH (air/water cooled)
PROJECT
DWG # 80228
DATE 2/2/01
SCALE N.T.S.
DWN. BY TW
ALTO-SHAAM, INC.



RIGHT SYSTEM



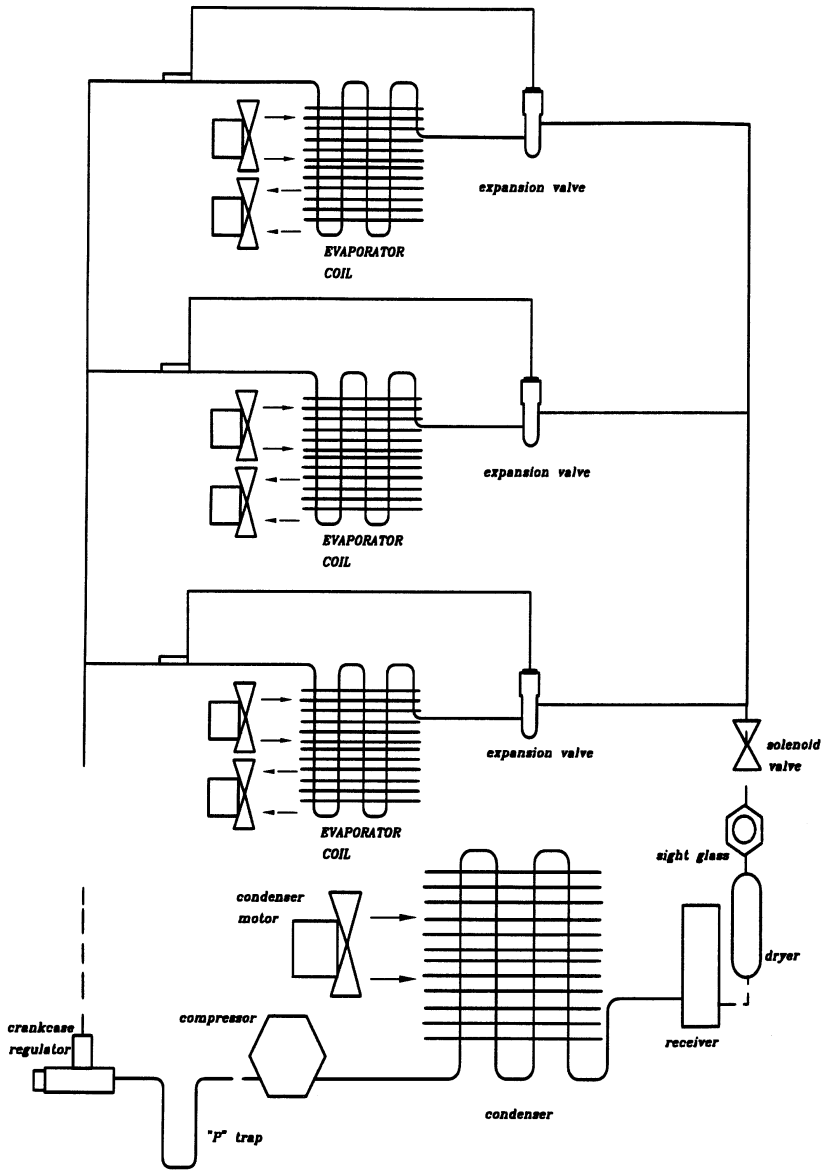
LEFT SYSTEM

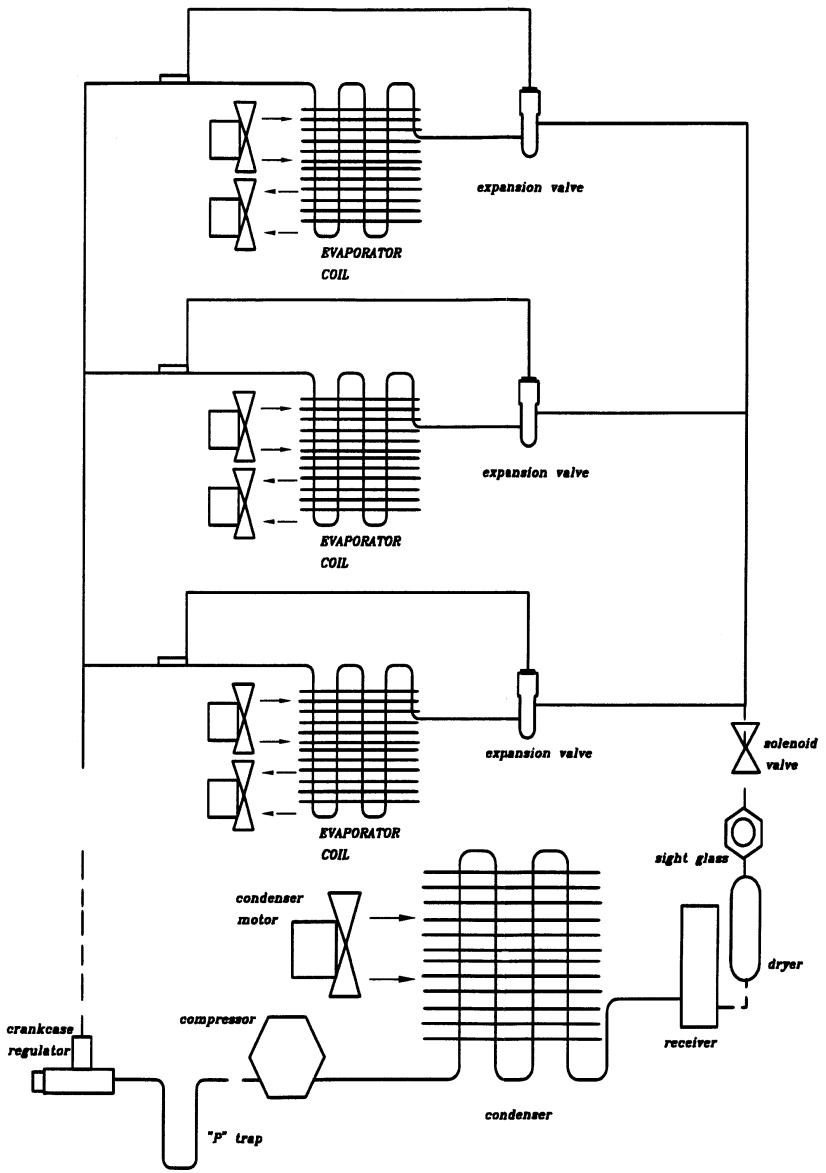
REV. A

MODEL QC100-2M-ADS

ITEM REFRIGERATION MECHANICAL PIPING		
PROJECT QUICK CHILL		DWG # C70046
DATE 12/9/98	SCALE N.T.S.	DWN. BY CW

ALTO SHAAM MENOMONEE FALLS, WI.





MODEL *QC100-2M-ADSR (remote)*

REV. *A*

ITEM *REFRIGERATION MECHANICAL PIPING*		
PROJECT *QUICK CHILL*		DWG # *C70047*
DATE *8/18/98*	SCALE *N.T.S.*	DWN. BY *CW*

ALTO SHAAM MENOMONEE FALLS, WI.

TRANSPORTATION DAMAGE and CLAIMS

All Alto-Shaam equipment is sold F.O.B. shipping point, and when accepted by the carrier, such shipments become the property of the consignee.

Should damage occur in shipment, it is a matter between the carrier and the consignee. In such cases, the carrier is assumed to be responsible for the safe delivery of the merchandise, unless negligence can be established on the part of the shipper.

1. Make an immediate inspection while the equipment is still in the truck or immediately after it is moved to the receiving area. Do not wait until after the material is moved to a storage area.
2. Do not sign a delivery receipt or a freight bill until you have made a proper count and inspection of all merchandise received.
3. Note all damage to packages directly on the carrier's delivery receipt.
4. Make certain the driver signs this receipt. If he refuses to sign, make a notation of this refusal on the receipt.
5. If the driver refuses to allow inspection, write the following on the delivery receipt:

   Driver refuses to allow inspection of containers for visible damage.

6. Telephone the carrier's office immediately upon finding damage and request an inspection. Mail a written confirmation of the time, date, and the person called.
7. Save any packages and packing material for further inspection by the carrier.
8. Promptly file a written claim with the carrier and attach copies of all supporting paperwork.

We will continue our policy of assisting our customers in collecting claims which have been properly filed and actively pursued. We cannot, however, file any damage claims for you, assume the responsibility of any claims, nor accept deductions in payment for such claims.

ALTO-SHAAM LIMITED WARRANTY

Alto-Shaam, Inc. warrants to the original purchaser that any original part that is found to be defective in material or workmanship will, at our option, subject to provisions hereinafter stated, be replaced with a new or rebuilt part.

The labor warranty remains in effect one (1) year from installation or fifteen (15) months from the shipping date, whichever occurs first.

The parts warranty remains in effect one (1) year from installation or fifteen (15) months from the shipping date, whichever occurs first.

Exceptions to the one year part warranty period are as listed:

A. Halo Heat cook/hold ovens include a five (5) year parts warranty on the heating element. Labor will be covered under the terms of the standard warranty period of one (1) year or fifteen (15) months.

B. Alto-Shaam Quickchillers include a five (5) year parts warranty on the refrigeration compressor. Labor will be covered under the terms of the standard warranty period of one (1) year or fifteen (15) months.

This warranty does not apply to:

1. Calibration.
2. Replacement of light bulbs and/or the replacement of display case glass due to damage of any kind.
3. Equipment damage caused by accident, shipping, improper installation or alteration.
4. Equipment used under conditions of abuse, misuse, carelessness or abnormal conditions.
5. Any losses or damage resulting from malfunction, including loss of product or consequential or incidental damages of any kind.
6. Equipment modified in any manner from original model, substitution of parts other than factory authorized parts, removal of any parts including legs, or addition of any parts.

This warranty is exclusive and is in lieu of all other warranties, expressed or implied, including the implied warranties of merchantability and fitness for purpose. In no event shall the Company be liable for loss of use, loss of revenue, or loss of product or profit, or for indirect or consequential damages. This warranty is in lieu of all other warranties expressed or implied and Alto-Shaam, Inc. neither assumes or authorizes any persons to assume for it any other obligation or liability in connection with Alto-Shaam equipment.

ALTO-SHAAM, INC.

Warranty effective January 1, 2000

RECORD THE MODEL AND SERIAL NUMBER OF THE UNIT FOR EASY REFERENCE. ALWAYS REFER TO BOTH MODEL AND SERIAL NUMBER IN ANY CONTACT WITH ALTO-SHAAM REGARDING THE UNIT.

Model Number: _____ Date Installed: _____

Voltage: _____ Purchased From: _____

Serial Number: _____ _____

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